

BACK YARD POULTRY FARMING AS A SOURCE OF LIVELIHOOD IN TRIBAL VILLAGE: AN ECONOMIC APPRAISAL

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ABSTRACT

The study was undertaken to evaluate the intervention of improved breed of poultry Divyan Red as back yard poultry in tribal village of Saraitoli, Ranchi, Jharkhand. The investment cost and return on back yard poultry were collected by administration of a well structured data sheet for growth, feed, egg production, egg weight, egg consumed, egg sold, live bird sold on the body weight basis by the stakeholders. The data were analyzed and accordingly production efficiency was calculated. The average age of bird laid first egg at 163 ± 2.57 days and body weight was recorded 1950 ± 10.23 g. The first laid egg weight was found 35 ± 3.13 g, whereas after 36 and 52 weeks, it was found 47 ± 3.98 g and 54 ± 4.41 g, respectively. The average total egg production per bird was recorded 133 ± 7.0 numbers. The total cost of production was found Rs 336.54 per bird and production cost per kg of live weight was Rs 161.72. The cost of feed and 30 days old chick was calculated about 54 % and 44 % of the total production cost, respectively. The gross return per bird was found Rs. 569.28. The net returns per live poultry bird including sell of egg and fresh live weight was Rs 232.74. The proportion of egg and meat gross income accounts for 26.88 % and 73.12 %, respectively. The gross expenditure incurred of Rs. 52,499.70 and gross income of Rs. 88,808.00 was found in back yard poultry farming. The net income obtained from the back yard poultry was Rs. 3025.68 /household/year with B: C ratio of 1:1.69. The meat -feed ratio was found 2.89. The result revealed that poultry breed Divyan Red birds improved tribal people's source of income and back yard poultry farming significantly contributes to rural livelihoods.

KEY WORDS: Backyard, Poultry Farming, Tribal Household, Benefit Cost Ratio and feed- Meat Ratio

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INTRODUCTION

Poultry is one of the subsidiaries for economic and social upliftment in agriculture sector. The backyard poultry production is an age old practice in rural India. Most of the backyard poultry production comprises rearing of indigenous birds with poor production performances. The potentiality of indigenous birds in terms of egg production is only 70 to 80 eggs/ bird/ year and meat production is also very less. However, the backyard poultry production can be easily boost up with improved breed of poultry and can promise a better production of meat and egg. Among traditional farmers, backyard poultry is a handy enterprise with low-cost initial investment, but high economic return along with guarantee for improving protein deficiency among the poor.

Poultry population has grown spectacularly throughout the world of 23 percent in developed and 76 percent in developing countries. There is evidence that investments in small-scale poultry farming generate handsome returns and contribute to poverty reduction and increased food security in regions where a large share of the population keeps some poultry birds (Jensen and Dolberg, 2003; Mack, *et al.*, 2005; Pica-Ciamarra and Otte, 2010). The increasing productivity of back yard poultry can contribute to alleviating poverty and reducing

malnutrition on a broad scale. In average, landless/marginal/small-scale Indian poultry keeping household, keeps an average flock size of 8 to 12 birds. In India it is estimated that over 50 % of land less and marginal farmers depend on poultry and small ruminant rearing.

The majority of farmers in rural areas of Jharkhand rely on rain-fed agriculture. This has led to the food insecurity in the tribal areas due to the lowering of agricultural output. The investments in back yard poultry farming can generate handsome returns and contribute to increased food and nutrition security among rural population. In Saraitoli village, few households have embarked on indigenous poultry farming. It was found that the poultry production systems in Saraitoli are traditional and poorly remunerative. The households were involved in mixed farming which encompasses crop cultivation, livestock rearing and poultry farming. The majority of farmers in Saraitoli practices poultry farming keeping indigenous domestic chickens (*Gallus domesticus*) in order to strengthen their livelihood and food security.

Jharkhand is having dominated population of tribal people. The tribal village of Saraitoli was found deprived of having scientific techniques for poultry rearing leading to the plummeting of its productivity. The paper presents an overview of back yard poultry farming by improved breed intervention in Saraitoli village for livelihood and food security to poor tribal farmers. There is enormous possibility of improvement in back yard poultry to provide employment, livelihood and food security in rural areas. The focus on exotic poultry breeds which often do not thrive well in rural areas, due to inadequate extension services, poultry feed unavailability, lack of technical knowhow which either do not reach to the poor or lack of awareness on scientific rearing. These currently limit the contribution of poultry to rural livelihoods. The intervention of improved breed of poultry Divyan Red was to study its role in small holder back yard poultry farming in ensuring income among the tribal people.

MATERIALS AND METHODS

The Saraitoli village is located between the parallel of latitude 23°15.0' N & longitude 85°28.2' E at an altitude of 598 m above mean sea level (MSL) having annual average rainfall of 1200 mm. The small-scale farmers of village embarked into the raising of indigenous chicken breeds and few farmers willing to start the enterprises, but due to financial constraints, could not started the poultry rearing. The farmers rearing indigenous chickens by traditional skill and having interest in poultry rearing was identified among 55 households by the Gram sabha. They recommended 12 households in participatory mode for scientific rearing of Divyan Red as back yard poultry farming. The data for observations on growth, feed given, egg production, egg weight, egg consumed, egg sold, bird live weight basis sold during farming was collected by administration of a well- structured data sheet. The farmers were imparted training before start of the intervention and exposure visit were also conducted to gain more practical knowledge by the stake holders. The descriptive statistics were used to analyze the data.

The intervention was made with improved poultry birds of Divyan Red by providing 13 numbers of chicks, 30 days old having average body weight of 210 ± 5.70 g to each household in the year 2013-14 under Tribal Sub Plan. The poultry feed, other feed supplement and medicines were provided with objective to thrive better under scientific management practices to grow faster than indigenous birds and lay more eggs leading to the improvement of livelihood. The care of poultry was done by periodical monitoring of diseases and protection from wild animals. Farmers also provided the supplementary feed of domestic waste. Farmers also house their birds at night to reduce losses from predators such as wild cats, snakes and domestic dogs.

RESULTS AND DISCUSSIONS

In Saraitoli village, a total of 156 poultry birds of Divyan Red were provided among 12 beneficiaries and household wise backyard poultry distribution, mortality, egg, meat production & income from backyard poultry farming system are depicted in Table 1. Since the 30 days old chicks were provided without sex differentiation, later on it was observed that optimum female to male ratio were not maintained which in turn affected the total egg production. The utmost care was taken during the back yard poultry farming by the farmers, but a total of 28 % mortality occurred due to attack of mostly by wild animals and diseases like Coccidiosis and Ranikhet.

Table 1: Household Wise Backyard Poultry Distribution, Mortality Egg, Meat Production & Income from Backyard Poultry Farming System

House hold No.	No. of Birds Given	Mortality	Male	Female	No. of Eggs Laid (Sold/ Consumed)	Meat Produced (kg)	Gross Income from Egg (Rs)	Gross Income from Meat (Rs)
1.	13	5	5	3	360	22.78	1800	4556
2.	13	3	7	3	390	28.25	1950	5650
3.	13	3	6	4	500	26.28	2500	5256
4.	13	1	8	4	520	33.26	2600	6652
5.	13	3	7	3	375	30.58	1875	6116
6.	13	5	6	2	280	24.79	1400	4958
7.	13	5	7	1	135	24.50	675	4900
8.	13	2	5	6	840	32.60	4200	6520
9.	13	4	4	5	700	25.50	3500	5100
10.	13	5	8	-	-	23.60	-	4720
11.	13	6	6	1	138	23.25	690	4650
12.	13	3	6	4	538	29.25	2690	5850
Total	156	45	75	36	4776	324.64	23880	64928

The total numbers of 4,776 eggs were produced from 36 female birds among the 12 beneficiaries and it was sold in the local market @Rs.5/- per piece. After attaining maturity of birds, they sold extra male birds @ Rs.200/-Kg of live body weight after maintaining male- female ratio of 1: 5. Finally, the total meat production of 324.64 kg was recorded after sale of all the birds. The Divyan Red provides a lot of meat due to their large sizes and also lays a bigger eggs compared to those of desi chickens. The total poultry feed consumed of 939.99 kg and cost incurred in rearing of Divyan Red poultry birds among households are depicted in Table 2. The cost of production of feed, thirty days old chicks cost and medicine, etc. was found to be of 54%, 44.40% and 1.60%, respectively.

Table 2: Expenditure Incurred in Rearing of Divyan Red Poultry Birds among Households

House Holds No.	Feed Consumed (kg)	Cost of feed (@Rs.30/- per kg)	Cost of 30 Days Old Bird (@Rs.150/- per Piece)	Cost of Medicine, etc., (Rs.)	Total Gross Expenditure (Rs.)
1.	65.84	1975.20	1950.00	75.00	4000.20
2.	74.99	2249.70	1950.00	75.00	4274.70
3.	82.13	2463.90	1950.00	75.00	4488.90
4.	96.36	2890.80	1950.00	75.00	4915.80
5.	86.88	2606.40	1950.00	75.00	4631.40
6.	78.09	2342.70	1950.00	75.00	4367.70
7.	68.10	2043.00	1950.00	75.00	4068.00
8.	83.58	2507.40	1950.00	75.00	4532.40
9.	83.58	2507.40	1950.00	75.00	4532.40
10.	67.20	2016.00	1950.00	75.00	4041.00
11.	65.50	1965.00	1950.00	75.00	3990.00
12.	87.74	2632.20	1950.00	75.00	4657.20
Total	939.99	28199.70	23400.00	900.00	52499.70

The gross expenditure incurred of Rs. 52,499.70 in rearing of Divyan Red poultry birds among households. The total cost of production per bird up to marketing was recorded Rs.336.54 and production cost per kg of live weight for poultry of Rs.161.72.

The observations taken on performances of Divyan Red birds are also depicted in Table 3. The average age of bird laid first egg at 163 ± 2.57 days and body weight 1950 ± 10.23 g was recorded among the poultry. The average total egg production/bird/year was recorded 133 ± 7.0 numbers. The eggs average weight was recorded 35 ± 3.13 g at first laying of eggs (163 ± 2.57 days) followed by 47 ± 3.98 g (36 weeks) and 54 ± 4.41 g (52 weeks), respectively. The present findings of age at first sexual maturity is comparable to the reports of Dolberg (2009), Alders et al (2009), Das et al (2012) and Kumari and Subrahmanyeswari (2014).

Table 3: Performances of Divyan Red Birds at Saraitoli Village

Particulars of Birds	Description
Initial average body weight of 30 days Divyan Red chicks	210 ± 5.70 g
Total Egg Production/bird/ year	133 ± 7.0
Age of bird at first egg (in days)	163 ± 2.57
Egg weight(g) at first laying 25 Weeks	35 ± 3.13
Body weight at first laying (g)	1950 ± 10.23
Egg weight at 36 Weeks (g)	47 ± 3.98
Egg weight at 52 Weeks(g)	54 ± 4.41
Colour of egg	Light brown, brown or creamy white

The economics in rearing of Divyan Red poultry birds among households are presented in Table 4. The total gross income generated in rearing of Divyan Red poultry birds among households was found to be of Rs.88,808.00. The gross return per bird was recorded Rs.569.28 and the net return per bird including sale of egg and meat was found Rs.232.74. The proportion of gross income from the sale of egg and meat was recorded 26.88% and 73.12%, respectively. The net income obtained from the back yard poultry was recorded Rs. 3025.68 /household/year with B: C ratio of 1.69. The meat- feed ratio was found 2.89 to be higher which indicates that meat production was economically remunerative in poultry breed Divyan Red. Rahman et al., (2016) also observed a higher meat-feed ratio in backyard poultry birds and opined that the ratio was economically viable.

The present findings are also in similarity with Miao et al., (2005) who opined that development of village chicken enterprises can be a sustainable way of improving food security and livelihoods of the resource poor farmers. The results revealed that Divyan Red as backyard poultry farming is highly remunerative in tribal household. This finding is being supported by Shumba and Whingwiri's (1988) as they asserted that village chickens contribute less to rural economies. The improved birds fetched better price in terms of meat and egg in the local market. It was also recorded in the present study that almost cent per cent rearing of back yard poultry were done by women in tribal households. This concurs with the results of the study which was carried out by Kusina and Kusina (1999), Ndiweni (2013) and Kusina et al., 2012.

Table 4: Economic Details of Raising Improved Breed of Divyan Red

Particulars of Expenditure	Description
Total feed consumed	939.99 kg
Cost of feed @Rs.30/kg	Rs.28,200.00
Cost of 156 Divyan Red chicks (30 days old @Rs.150/- per piece)	Rs.23,400.00
Cost of Medicine, transportation, etc.	Rs.900.00
Total Gross Expenditure	Rs.52,499.70

Table 4: Contd.,	
Total cost of production per bird up to marketing	Rs.336.54
Production cost per kg of live weight	Rs.161.72
Particulars of Income	
Sale of egg @Rs.5/- per egg	Rs.23,880.00
Sale of bird @Rs.200/- per kg on live weight basis	Rs.64,928.00
Gross income	Rs. 88,808.00
Gross income per house hold	Rs.7,400.00
Gross return per bird	Rs.569.28
Net income from improved Poultry bird	Rs. 36,308.18
Net income per house hold	Rs.3025.68
Net income per bird	Rs.232.74
Meat-feed ratio	2.89
Benefit cost ratio	1:1.69

Thus, it revealed backyard poultry farming has improved income, food security and nutrition status among the tribal people. It provides cheap, readily harvestable protein enriched white meat and eggs (Dolberg and Petersen, 2000). This reduces the prevalence of human diseases associated with malnutrition. It was also observed in the present findings that Divyan Red was more tolerant and less susceptible to disease than desi chickens. The households who engaged in backyard poultry farming with improved breed paid their children school fees, medical expenses, buy clothes and some basic food stuffs also. Similarly, Fajemilehin (2010) also asserted that village poultry production, if developed, can be employed as a tool to alleviate poverty, promote gender equality and ensure food security for economically disadvantaged farmers. Poultry production empowers women who are normally a disadvantaged in rural and especially in tribal areas. The back yard poultry rearing provide proteins (egg & meat) to them in addition to manure. According to Das (2005) poultry manure is an extremely rich source of nitrogen and organic matter. It is used to improve soil fertility for high crop production. It was also observed in most household's chickens as back yard poultry, destroys crops during the farming season leading to quarrels between farmers.

It was found that the backyard poultry production system in Saraitoli village was traditional and poorly remunerative. Therefore, the present intervention of dual purpose improved breed of Divyan Red, thrived well under balanced feeding management and lay more eggs and meat production in turn which improves the livelihood security among the tribal people.

CONCLUSIONS

It is important to recognize the contribution of back yard poultry to the income of the tribal farmers as their poverty remains at unacceptably high levels. The backyard poultry made an important contribution for poverty alleviation and mitigating their risk factor and should be considered as an important tool for improving rural livelihoods. The study reveals that backyard poultry farming significantly contribute to farmer livelihoods in terms of food and cash. The farmers made a profitable use of improved breed of poultry bird Divyan Red. Therefore, focus should be on intervention of exotic poultry breeds in back yard poultry, which thrived well in rural areas and will definitely enhance the contribution of poultry to farmer livelihoods and in turn reducing poverty and increasing food security. The major finding of this study reveals that poultry farming has reduced food insecurity by providing meat and eggs and they are source of livelihood by generating revenue for households. Finally, farmers should keep more of Divyan Red as they produce more number of eggs per given season and meat also. The challenges in poultry farming include outbreak of diseases, predators, theft and shortage of feed and housing problems at night. The rapid growing demand for poultry meat and eggs can be

thrived by adoption of back yard poultry in rural areas. Further it reveals the need to encourage farmers to rear Divyan Red as back yard poultry by giving them balanced and nutritional poultry feed. The farmer also must be given training on poultry production to equip them with relevant skills to merge scientific methods in poultry management for improving their productivity.

CONSTRAINTS

The constraints experienced in the small holder back yard poultry production revealed disease control, protection against various predators, better feeds and medicine availability, separate house, improved breed, proper marketing, training and management for efficient back yard poultry farming, capital and farmer organization. The back yard poultry production has to be improved for fetching better income from the past traditional system by introduction of modern intensive back yard poultry production methods, new breeds and improved preventive disease control measures. This type of back yard poultry production has to be adopted in rural areas but the scope of adoption has been limited due to the high input cost, its availability and skills required. Large chickens with high fertility rates are more profitable, however in Divyan Red in spite of increase in income, farmers experience problem of predators and shortage of feeds.

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